

REMARKS

The Examiner's action dated September 17, 2002, has been received, and its contents carefully noted.

In response to the objection to the abstract, submitted herewith, on a separate page, is an amended abstract.

The objection to the drawing is traversed for the reason that the "span of the polar step", as recited in original claim 1, is illustrated in the application drawing. Specifically, it is identified in figure 1 with the letter "p". It is therefore asked that the objection to the drawing be withdrawn.

In order to advance prosecution, claims 1-16 have been cancelled and replaced by new claims 17-32. These claims have been drafted to be in a form consistent with the requirements and conventions of U.S. practice and provide a positive recitation of all elements recited therein. For the sake of improved clarity, the new claims employ terminology taken from the Heidelberg reference. Thus, the phrase "polar expansion" has been replaced by --pole group-- and "polar step" has been replaced by --pole distance--.

In response to the objection presented in section 3 of the action, the new claims that replace claims 5-16 have all been drafted to be singly dependent from new independent claim 17.

In response to the rejection presented in section 5 of the action, it is submitted that, as noted above, the specification and drawings do clearly disclose that step p is the space between two pole group pairs. As stated at page 4, lines 19-20 of the specification, pole group pairs C₁ and C₂

are separated from one another by a polar step, or pole distance, (p). The statement that they are separated from one another by a step, or distance, (p) represents a clear indication that there are separated by a space. At page 7, beginning at line 16, it is stated that cores A_1 and A_2 are distanced by a magnetic step p equal to half a permanent magnetic, or half a permanent magnet plus a plurality of whole permanent magnets equally distanced. It is thus submitted that the specification clearly discloses that the step p represents the spacing between polar expansion, or pole group, pairs. The specification has been amended, at page 5, line 5, to indicate that the polar step (p) is equal to a fourth of a cycle or "half a permanent magnet". As regards the question of the meaning of artificial energy, this is the same as electromagnetic energy. The term "artificial" was used to distinguish from the energy associated with the interaction of a permanent magnet with a ferromagnetic material, which does not involve the supply of an electric current to an electromagnet. The new claims have been drafted to not include the terms "artificial" and "natural", but rather to refer consistently to electromagnetic energy and ferromagnetic energy.

In response to the rejection presented in section 7 of the action, the newly submitted claims have been drafted to be consistent with the requirements of U.S. practice. It is believed that the term "primary" employed in new claim 17 is well-defined in that claim, which specifies that the primary comprises pole groups each having a core and a coil. Claim 17 defines "a control system", rather than a related control system. As noted above, the term "artificial" is not employed in the new claims and these claims have been drafted to

eliminate all of the other objectional recitations mentioned in the explanation of the rejection.

The rejection of the original claims as anticipated by Heidelberg is respectfully traversed. The present invention is directed to a novel machine that utilizes electromagnetic energy and ferromagnetic energy in a novel manner not contemplated by Heidelberg. In particular, operation of a machine according to the present invention makes use of ferromagnetic attraction that occurs between permanent magnets cores when no electric current is being supplied to the electromagnet coils. This clearly distinguishes from the disclosure of Heidelberg, particular attention being drawn to column 4, lines 67- column 5, lines 9, wherein it is stated that switching means 30 are operative so that current flows in one direction through the coils of a group when a signal from sensor 28 is present, and current flows in the opposite direction through the coils when sensor 28 does not provide a signal. Since each sensor 28 must, at any given time, either carry a signal or not carry a signal, it is clear that current is always being supplied to the electromagnet coils.

Furthermore, claim 17 defines each pole distance, which by the pole groups are spaced apart, as being $(n+1/2)$ times the dimension of a permanent magnet in the given direction. Support for this recitation will be found in the specification at page 7, lines 19-20. That spacing distance is not disclosed by Heidelberg. That reference does indicate that the electromagnet pole distance 26 at the boundaries of pole groups is 1.6 times the pole distance 24 within a group. With these stated dimensions, and considering the configuration of the individual poles, for example as shown in figure 1 of the reference drawing, there would be no basis for

concluding that a machine constructed according to the disclosure of the applied reference would have the spacing defined in application claim 17.

It is therefore clear that the machine defined in claim 17 differs structurally from that disclosed by Heidelberg, at least by its recitations that the control system is operative to halt "the supply of energizing current to said at least one electromagnet coil during successive de-energizing time periods", as well as by its recitation that the "pole distance corresponds to $(n+1/2)$ times the dimension of a permanent magnet in the given direction".

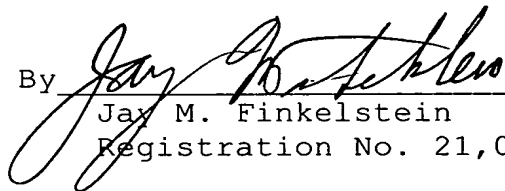
Accordingly, it is requested that all of the objections are rejections presented in the action be reconsidered and withdrawn, that claims 18-32 be allowed and that the application be found in allowable condition.

If the above amendment should not now place the application in condition for allowance, the Examiner is invited to call undersigned counsel to resolve any remaining issues.

Respectfully submitted,

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